wooden posts, as can be seen in Figure 82, p. 229. Facing the court, 343
the stalls are as open as the verandas and therefore they provide shelter only against rain and snow, while the animals are exposed, without protection against the winter cold. Fodder troughs made of clay run the length of the walls of the stalls. /247/ Their borders are made of beams to prevent their crumbling away.

These stalls serve not only as shelter for the horses, donkeys and oxen of the owner but also for the riding animals and beasts of burden of the visitors and guests. Therefore they are always laid out on a much larger scale than would be necessary for the needs of the owner alone. In addition, the stalls are also used for the storage of grain, alfalfa, straw, etc. and for the night lodging of the boys and servants during the rain. The winter provisions are piled up on dry alfalfa on the roofs of the stables and are either exposed without protection to the rain and snow or in the best circumstances are covered on top with reed mats.

Threshed grain is stored in the same kind of underground pits as the nomads use. The historians of Alexander the Great already mention these underground storage granaries, which they called seir or sir, as a characteristic of the Bactrians and the Sogdians who were the inhabitants of Turkestan of that time. (1)

1. Curtius, for example, writes in Chapter 17 of Book VII concerning the presence of underground granaries in Bactria, the Afghan Turkestan of today: Siros vocabant barbari scrobes, quos ita sollerter abscondunt, ut, nisi qui defoderunt, invenire non possint: in his conditae fruges erant.

In the middle of the court there is a pond of a larger or smaller 312
size and its stagnant and usually incredibly dirty water is used not only for drinking water for cattle but also for humans, as well as being used for the preparation of tea and food and in the meantime for washing clothes as well.

From the court one enters the gardens by a small low door, and 351
this is the real dwelling place of the more prosperous Central Asians during the warm part of the year. The gardens are usually planted very densely with trees to provide as intense a shade as possible, and they are intersected by a countless number of small canals which serve

2: Caroe S-4 (no date) 1953 RL1 Soviet Central Asia RL1

admission of the justice of Barthold's criticism of the annihilation of Khorezm. (Khorezm was really the settled area, while the Karakalpaks are in the main a steppe tribe, but the areas overlap.) And in 1929 there were adjustments between the Uzbek and the Tajik country, in particular the transfer of the lower part of the Farghana Valley — that part around Khojent (now Leninabad) inhabited mainly by Tajiks — from Uzbekistan to Tajikistan. The upper part of the valley, east of Andijan, is in Kirghizia, and a glance at the map reveals a strange interlacing of the inter-republican boundaries in this part of Central Asia.

Let us pursue this geography a little further, for on these administrative divisions the Kremlin relied to a large extent in support of its claim to be a respecter of nations. The official thesis was that the boundaries were drawn in accord with national principle, but not in such a way as to clash with economic divisions. It was stated, for instance, that each irrigation system was included as a rule in one republic.[1] There is Stalin's own verdict as guide.

> I think the recent delimitation of national frontiers in Turkistan may be regarded as an excellent example of how the Soviets can be brought into closer touch with the masses. . . . In a pre-revolutionary era these countries were torn into fragments and were a convenient field for the exploitatory machinations of the powers that be. The time is now come when these scattered fragments can be reunited into independent states, so that the toiling masses can be welded with the organs of government.[2]

The map itself belies him, for the boundaries are confused and the territories twirled and twisted round each other like the spokes of a catherine wheel. It is not even true that the boundaries divide the language-stocks, the 1926 census showing considerable minorities of Uzbeks in Tajikistan and Kirghizia, of Kirghiz in Uzbekistan and Tajikistan, and of Tajiks in Uzbekistan and Kirghizia. Indeed, as history shows, Uzbeks and Tajiks in particular are inextricably mingled in all these parts of Turkistan. Turning to irrigation, we note that the

[1] Mikhailov, Bib. I, 72. [2] Bib. I, 90, p. 209.

[2] See cat. 116, map facing p. 272 -- Analyst

2: Caroe S-4 (no date) 1953 RL1 Soviet Central Asia RL1

Turning to irrigation, we note that
Sir Darya starts in Kirghizia, passes into Uzbekistan, thence 131
into Tajikistan, thence again into another part of Uzbekistan, 312
and finally runs out into Kazakistan. The Amu Darya too 133
starts in Tajikistan, passes along the short southern side of Uzbekistan, thence flowing into Turkmenia, pursues a course close to the Uzbek boundary until it re-enters Uzbekistan in the Khiva region, only to touch Turkmenia once more at Takhya Tash opposite Nukus, and finally to flow back into Uzbekistan again. In both cases the irrigation canals often have to cross what on the original Soviet showing were nothing short of national frontiers between independent units of a federal State, and it is not easy to uphold the claim that the irrigation systems have been kept within single administrative units. The difficulty of organizing irrigation across 000
a real administrative frontier is obvious to anybody who possesses experience, for there is no administrative question which leads to so much disagreement and disharmony as the disposal of competing claims to irrigation waters from the same canal or from different canals on the same river. Assuming for the sake of argument the official Soviet theory that these republics are real sovereign autonomous units in a federal structure, it would be impossible for them, situated as they are up and down the same rivers, to reach the necessary agreements for the season-to-season, week-to-week, and even day-to-day distribution of water, without which an irrigation system does not work. The conclusion is irresistible that one reason for so drawing these boundaries was to compel a degree of central direction which makes nonsense of a real autonomy. Or we may say if we like that it did not matter how the boundaries were drawn, for the administration of all essential matters would be in central hands. In either case their only meaning would be to divide artificially stretches of territory like the Farghana or Khorezm oases, each of which has a natural geographical and agricultural unity. The best that can be said for them is that the convolutions look pretty on the map.

There is another curious feature of political geography in 131
Soviet Central Asia. The five capitals are — of the Kazaks 361

2: Caroe S-4 (no date) 1953 RL1 Soviet Central Asia RL 1

many years the Tsars had been toying with the idea of sweeping all this aside, but so strong was local sentiment that they had failed to act. But by a decree of May 1924 the Soviets vested all control of distribution of water in the State. And they applied it ruthlessly. The result was to remove settlement of disputes from the tribal authority near at hand, substituting an impersonal officialdom, and at the same time to enable authority at the desired moment to decree without gainsaying the kind of crop which should be sown and the arbitrary price for which it would be taken up. The reform also served the purpose of shifting the weight of economic and political power from the people to the Party. It was easier to carry out in the areas of intensive cultivation where farmers were tied to the land and must have water or starve, and where a redistribution by means of robbing Peter to pay Paul had at least some chance of pleasing Paul. But even here there was a fierce struggle between the Party and the traditional leaders who were often loved and trusted by the people and understood their minds. These leaders were at first able to prevail over the Party men in local elections, and the latter had to resort to confiscation of crops, hay and cattle, and even to expulsion of big landowners, before they could prevail.

On the steppe it was much more difficult to carry through the process, for the nomads were seldom tied to definite holdings, and the tribal allegiance to the chieftain was in the patriarchal tradition. John Littlepage,[1] the American mining engineer, who spent the ten years from 1928 in the midst of this country, has described with obvious sincerity exactly what he saw of conditions before the Second Russian Revolution of 1929 (as he calls it) and after it. In 1928, before collectivization, tribal life on the steppe was scarcely touched. Meat and food were plentiful and the tribes came and went with their herds as they had been used to do. But the Kremlin had already announced that the nomad's life was demoralizing and must be broken up. And that meant the destruction of the old tribal organization, and the conversion of the tribes,

[1] Bib. I, 62.

2: Caroe S-4 (no date) 1953 RL1 Soviet Central Asia RL1

is far from being a technical one to be applied successfully from a central draughtsman's office: it is a form of public works which to command success requires of its professor a sort of sixth sense, a feeling after the countryside, the climate, the lie of the land, the local native knowledge acquired by experience, the queer things water does both above and under the ground. The successful irrigator must be more than an expert scientist; his science has become an art. To see how and where he can give life to desert lands he needs some of those intuitive qualities of genius that distinguish the architect from the builder, the landscape-gardener from the tractor-driver. There have been men like this in the Panjab, Egypt, the Tennessee Valley; they have gained great experience which with wisdom could be turned to account by the Russians in Asia also. Such men treat water like a precious fluid that must be humoured. They know, for instance, that to preserve its power to grant fertility water must have its outlets as well as its infall.

The beginnings of Russian irrigation in Turkistan were not particularly auspicious. In all the piedmontane tracts there existed before the Russians came an indigenous system of irrigated channels, constructed with primitive tools and maintained by the joint labours of the village communities. The skill going to the construction and maintenance of such systems is well described in such books as Holdich's *Indian Borderland* and *Gates of India*; it was considerable. In all these countries water is more important than land, and whoever controls the water has power over the land. The method by which this power was acquired by the Russians has been described, and it constitutes one of the most definite steps taken to give effect to the new economic policy. In a land dependent on artificial watering the State thus secures a more absolute control over the peasant than can be the case where fertility depends on rainfall.

In such lands intensive cultivation of small-holdings is the rule. (Incidentally, intensive cultivation is akin to gardening, and of all types of agriculture the least suited to collective

2: Caroe S-4 (no date) 1953 RL1 Soviet Central Asia RL1

mechanization.) The Russians, coming fresh to the science of tropical agriculture, believed that the native use of wooden ploughs and shares instead of the iron plough implied a primitive condition. They could not estimate the value of the intensive cultivation that had gone on for thousands of years in the country. Togan tells us[1] how they tried to teach the unirrigated system of agriculture, as if the Turkistan people in their ignorance were incapable of understanding what it meant. They aimed not at getting a good crop out of a small-holding, but at cultivating large areas in order to get a large crop. Even Nalivkin, a former Governor of Farghana, had to admit that the Russian conquest had brought with it the cessation of intensive cultivation.

There was a time when even the Orsk and Emba areas north of the Caspian used to be cultivated by irrigation. There is evidence that in 1920 irrigation in that area was still being maintained to some extent, though the tradition was even then disappearing as the nomad Kazak inhabitants were driven south and agriculture in the Sir Darya basin decayed. Two Russians, Asmolovsky and Yusuf Karamshev, observed that, although the Sir Darya Kazaks used old primitive ploughs, it was for that reason that the land ploughed up with them retained its moisture and was more productive than that worked with the Russian plough. But there was one useful thing the people of Turkistan did learn from the Russians — how to mow with the scythe. Men like Barthold at that time issued warnings about the new methods and from the start were pessimistic about the attempt to cultivate the Mirza Chöl[2] (the desert near Jizak west of the point where the Sir Darya issues from the basin of Farghana). Never in history had these parts been farmed, although they were close to the river, and this was a case for learning from the experience of the native population, who must have had good reason for leaving these lands alone. Why not revive with the quickening

[1] *Op. cit.* pp. 291-3.

[2] The *Mirza Chöl* is a name also applied to the Betpak Dala, north of the Chu-Talash area.

2: Caroe S-4 (no date) 1953 RL1 Soviet Central Asia RL1

241 water the lands where there existed traces of former irrigation,
312 as, for instance, the disused canal system of Gavkhore on the right bank of the Amu Darya opposite Khorezm? But no: Barthold was a mere professor, who had made for himself a picture of the country from 'Sart' sources. The Russian engineers were convinced of their wisdom, and money was devoted to schemes which, far from turning the land into a garden, in a few years led to water-logging, no measures having been taken to prevent the land turning into a morass, a home of reeds and waterfowl and a source of malaria.

> In September 1922 [says Togan], I passed by the lower side of the canals in Mirza Chöl, and a Kazak showed me how the poplars planted by the Russians were drying up, and the surface of the land, cultivated a few years before with care and trouble, was now covered with saltpetre.[1]

653 The Tsarist irrigation engineers seem to have had little
312 conception of the dangers of water-logging and saltpetre which arise in a flat riverain country under a tropical sun, when water is brought to it and the fall is insufficient for natural drainage. The remedy lies in the provision of artificial drainage by digging channels to lower the watertable, but this is not always easy and it is very expensive. Even in their weirs and dams the Russian engineers set their bricks much too loosely, as compared with the old brick walls of indigenous canals, which had held for centuries. An effort by the Grand Duke Nicholas at the end of the XIXth century to construct a perennial irrigation system on the Amu Darya in Khorezm resulted only in cutting across and destroying the old indigenous inundation channels. The project was conceived as one in line with British irrigation works in the Panjab and in Egypt, but it is evident that the Russian engineers of that time had much to learn both as regards original canal construction and the remodelling of old works.

The Soviets have given great attention to irrigation works in Central Asia, and have certainly profited from the mistakes of their predecessors. Although in this case also it is hard to

[1] *Op. cit.* p. 295.

2: Caroe S-4 (no date) 1953 RL1 Soviet Central Asia RL1

disentangle achievement from expansive visions existing only in the planner's mind, there is no doubt that in Farghana, in the Chu–Talash area, and also on the Zarafshan and the Vakhsh, much good work has been brought to a conclusion. The best-known completed works are:

(*a*) The Stalin Great Farghana Canal, 270 km. long.
(*b*) The Mikoyan, or Northern Farghana, Canal, 165 km. long.
(*c*) The Andreev, or Southern Farghana, Canal, 108 km. long.
(*d*) The Katta Kurgan and Verkhno-Bukhara Reservoirs on the Zarafshan.
(*e*) The Great Chu Canal, 270 km. long.
(*f*) The Vakhsh Canal.

The construction of the first was widely advertised, with due praise allotted to the 160,000 *Kolkhoz* members who dug it out, and completed it in forty-five days. The availability of *corvée* labour of this kind, which can be used in the off-season for irrigation work, must greatly aid the authorities in their task, not only on construction but on maintenance and silt-clearance. The official case is that a considerable percentage of all *Kolkhoz* workers in canal areas is used for such duties, and the labourers while absent from their homes receive their fair share of *Kolkhoz* produce. That may work in the rich and smiling Farghana Valley. But how is the case with those transported to dig in the wastes of the deserts? The logistical effort alone needed to feed armies of workers in the Karakum must be colossal.

It has been suggested that construction of the Stalin-Farghana Canal called out nearly one million labourers and that there was suffering on a large scale. Yet, in the face of all criticism, there remains an impression that this in itself was a great work, which has added much to the fertility of an already productive region. Systems of government change, but an irrigation work remains.

Since the war there has been planning on a far grander

2: Caroe S-4 (no date) 1953 RL1 Soviet Central Asia RL1

Since the war there has been planning on a far grander
653 scale. The first two schemes which follow may be called
● 812 'local' in the sense that, in appearance at least, they are not
185 part of a continental linked project dealing in the waters of more than one river. These two projects are:

(i) *The Karakum Canal*

The project was an old one, but it was revived in 1945, and ratified in 1947. The main channel is to be some 350 miles long and to irrigate nearly half a million acres. The headworks were to be somewhere near Kerki on the Oxus left bank, and the main objective is to increase the cultivated area watered by the Murghab and Tejen rivers in the Merv and Serakhs oases. Work was stated to have been started in 1949.

A work of this kind, skirting the Kopet Dagh line of mountains which forms the Persian frontier, must cross the natural drainage lines of the country, and involve heavy bridging or siphoning and much danger of being breached by floods, to say nothing of being choked by sand-drifts. Without any local knowledge it is possible to affirm that this canal must take time to construct and will be expensive to maintain. Confidence in the Soviet engineers is not increased by loose talk that the canal will be used for shipping. Navigation and irrigation are ill partners.

(ii) *The Uzbek, or Upper Oxus, Canal*

This project was planned by the Uzbek Academy of Sciences in May 1947. It is a very large scheme for a canal 500 miles long to supplement the irrigation at the tail of the Kashka Darya and the Zarafshan systems — among the best cotton-lands in Central Asia — by water from the Oxus. The project was described at some length by a spokesman of the Central USSR Ministry of Agriculture. The plan envisages the construction of a headworks at Kelif on the Oxus right bank, where the river finally emerges from the hills into the plain. At this point the right bank rests on a spur of the Hissar Range, a rocky eminence which canalizes the channel

2: Caroe S-4 (no date) 1953 RLI Soviet Central Asia RL 1

and prevents it from shifting as it is always doing in its course through the plains lower down. On the face of it then the site is well chosen for the headworks of a perennial canal. At this point a dam described as 6 km. long and 20 metres high was to be constructed. For the next 100 km. the main canal would run along the skirt of the Hissar Range, passing on its way a point named Akyar where it would drop 34 metres, the fall being used to establish a hydro-electric power station. The canal would then swing northward to cross the Kaskha and Zarafshan rivers and augment the water-supply in both. The forecast spoke of opening up new irrigation to the extent of 1·2 million hectares, or nearly 3 million acres, and the estimated cost was 7000 million roubles. No date of completion was named.

This project, like the last, involves cutting across the natural drainage lines of the country, and the upper part of the main channel, skirting the great chain of the Hissar mountains (rising at one point to over 15,000 feet) will necessarily have to withstand occasional floods of extreme violence. Further, the crossing of the Kashka and Zarafshan basins at a point presumably not far distant from the debouchment of those rivers into the plains will demand engineering and constructional skill of no mean order.

The plan calls for the establishment on the falls of hydro-electric generating stations of an aggregate capacity of 1 million kilowatts, equal to about ten times that of the Ardnacrusha Station on the Shannon.

The spokesman said that these two canals together were expected to take nearly 2000 cubic metres per second [1] from the Amu Darya. On the assumption that each is designed to take 1000 cubic metres, each of these canals would be about twice as large as any of the great works constructed in the Panjab. This 2000 cubic metres volume is quoted as taking about half the total discharge of the river even in July and

[1] To convert cubic metres into the normal British engineer's standard of water-volume, viz., cubic feet per second, an adequate rule of thumb is to multiply by thirty. 1000 c.m.s. would therefore be equivalent to about 30,000 'cusecs'.

2: Caroe S-4 (no date) 1953 RL1 Soviet Central Asia RL1

653
185
312

August, the flood months owing to summer melting of snow in Oxus' 'high mountain cradle at Pamere'. A draught on the river of this order must of course put in jeopardy the irrigation down-stream in the Khorezm area, but the spokesman met this by explaining that three reservoirs were to be constructed to store 6000 million cubic metres in the seasons of low demand.

These two projects for irrigation from the Oxus, great as they are, pale into insignificance when set against an immense integrated plan, described as 300 times the size of the T.V.A.[1], for the application of the latest sciences to the Dnieper, Don, Volga and Amu Darya basins in the connected fields of irrigation, navigation, hydro-electric power and afforestation. Here we are concerned with the Amu Darya only, but the plans announced cover much the same ground on the European rivers. Over the whole field the planners speak in terms of transforming an area of two million square miles, two-thirds the size of the United States. The rivers are to be dammed at a number of points, the dams forming reservoirs many miles across; power stations of great capacity are to be established at these barrages with irrigation canals taking off at the same points; ocean-going steamers are seen as penetrating to the lakes through locks; and finally belts of forest, three miles wide (quite modest this), are to be planted in the valleys 'to keep them damp and on the watersheds to let the run-off from melting snows down gently'. In the Karakum, an awkward place for labour, the forests are to be sown with seed broadcast from aircraft. Finally, the suggestion is that, to avoid a fall in the Caspian Sea following the diversion of rivers to irrigation, waters flowing to the Arctic are to be impounded to compensate the southern rivers. A presumably serious commentator[1A] has written that it is possible that ultimately no water from Siberia will go to the Arctic, and it has even been suggested that the consequent greater salinity of the Arctic Ocean may reduce the size of the Polar ice-cap.

[1] Tennessee Valley Authority.

2: Caroe S-4 (no date) 1953 RL1 Soviet Central Asia RL2

Turning more particularly to that part of the scheme to be derived from the waters of the Amu Darya, to be called the Turkmenian Canal, the same commentator [1A] stated:

> The scientists told me a great deal about how they had planned the scheme for the Karakum desert. . . . They are chosen to cover the whole range of interests . . . there are hydrologists, navigation experts, electrical experts, every kind of engineer, soil scientists, zoologists, botanists, geologists, there are also geo-physicists and seismologists . . . besides all these there are the archaeologists, who are considered a very important part of the scheme.

In the presence of this battalion of experts from Academies of Sciences, with some conflict of interest (one would think) even in Russia, the genie of the scheme will surely sigh for one good practical engineer.

The Turkmenian Canal itself was announced in September 1950 in a decree of the Central Council of Ministers of the USSR. It is nothing short of an attempt to realize the old dream for the redirection of the Oxus back into its ancient course to the Caspian Sea by means of a canal 700 miles long starting from Takhya Tash on the left bank close to Nukus, skirting the Sarikamish depression (which, being even deeper than the Caspian, would take too long to fill up), and thence along the old bed of the Özboy across the middle Karakum and through the Balkhan gap into the sea near Krasnovodsk. [1A] It is not unamusing to reflect that this also was an idea in the minds of Tsarist engineers more than fifty years ago. Curzon, writing in 1889, mentions that as a navigation project it had even occurred to the fertile mind of Peter the Great, and quotes the scornful saying of the German engineer Kiefert referring to the project, when at the height of its favour in the seventies of last century, as the great Central Asian sea-serpent. But it seems clear that a decision has now been taken for a canal to irrigate 1,300,000 hectares or about 3,000,000 acres, and to carry three hydro-electric generating stations, each with a capacity of 100,000 kilowatts (each about equivalent to the Shannon Station in Ireland). Work was to begin in

[1A] Professor J. Bernal, F.R.S., Bib. II, 1.

[1A] [See cat. 16, pp. 23-26 - Analyst]

2: Caroe S-4 (no date) 1953 RL1 Soviet Central Asia RL1

653
185
312

1951 and is scheduled for completion in 1957. The official spokesman [1] stated:

> The idea of bringing life to the desert by turning the course of the Amu Darya towards the Caspian Sea originated long ago. Yet Tsarist Russia was incapable of carrying it out. It was on the initiative of Stalin that the Government decision was taken to revive the desert and fulfil the age-old dreams of the people of Central Asia. The special characteristic of the present scheme is that the waters will be used in their entirety for irrigation and will not be discharged into the Caspian Sea as proposed in all preceding projects. All remaining canals of the world, including those of America, Egypt and India, are considerably shorter. . . . Krasnovodsk will receive an abundant supply of water [is this inconsistent with the special characteristic?]. The new irrigation construction is an important link in the great Stalin plan for the transformation of nature. The Caspian desert plain will soon be converted into a marvellous flourishing land.

The project is linked with the railway constructional plan already mentioned for a line northward from Charjui to Kungrad along the Oxus left bank, that described as one of the great railway building feats of all time.[2]

000

In face of the admissions of short supply in the river which will follow the completion of the first two Amu Darya projects above mentioned, it is not easy to see how the Takhya Tash headworks — down-stream of Kelif and Kerki — would find sufficient volume to irrigate the whole of the Karakum from Khorezm to the Caspian. Can it be that this grandiose project for restoring the prosperity of the days before 1573, the year when the Oxus turned to the Aral Sea, is alternative and not supplementary to the Karakum project? It is possible that the surveys may have convinced the Soviet engineers of the difficulties of constructing a canal along the skirts of the Kopet Dagh, with all the dangers of breaching by flood, and induced them to have second thoughts. It is not inconceivable that they, or their political superiors, may have been influenced by the romance which appeals so greatly to the local bourgeois patriots, that of turning the Oxus back

[1] Deputy Minister, Cotton Cultivation USSR. [2] Bib. II, 10.

312

An "arik" or irrigation ditch in the orchard zone round Samarkand. Large parts of Turkestan can only be kept fertile by artificial irrigation.

4:Leix U-5 (no date)1941 RL1 Turkestan RL1

532

Bokhara ruler of the 16th century cutting a melon. The features show a pronounced Turkic-Mongol cast. Contemporary miniature.

133 the Caspian Sea, and it is possible that at one time the entire river ran into that sea. Therefore, we find in the middle of the Kara Kum desert the ruins of large medieval towns marking the course which the water at one time took. At the present day both the Amu Darya and the Sir Darya run into the Aral Sea.

312 The four other rivers have no outlet, and would disappear in the desert, were it not for the fact that a system of irrigation which has been developed over a period of thousands of years serves to turn their waters to useful account. By means of this system the water is conducted through a net-work of canals which finally become mere ditches (ariks); thus it finds its way all over the country into every field, cotton-plantation, and orchard (see ill. page 1436). The distribution of the water is so well regulated that every peasant in Western Turkestan knows exactly on what day he can water his fields. Among these four rivers there are two particularly important ones, the Serafshan, the waters of which fill the ariks and mosque-ponds of Bokhara and Samarkand, and the Murghab, on which the prosperity of the oasis of Merv depends. In war-time the first thing to be destroyed was invariably the canal-system. The ancient city of Merv, at one

p. 12

312 time one of the most flourishing towns of the Orient, and many other similar settlements have thus become deserted ruins, covered with thorny bushes and saksaul (salt 245 shrubs). The irrigated districts on the contrary are exceedingly fertile; they produce cotton and fruit rather than grain. Apricots grow in such abundance that only a small portion of the harvest can be eaten or dried for the winter; pomegranates, figs, and grapes are to be had in large quantities. No country produces more or better varieties of peaches, and melons are grown even in districts which are 484 practically deserts. Traffic by caravan (see ill. page 1434) has reached a very high standard of development.

[361 The municipal civilization which has grown 175 up in these oases is of great antiquity, as is shown by the Zend Avesta, the sacred book of the ancient Persians. Merv and other important towns have perished in the course of the centuries, others, like Samarkand, continue to flourish to this day. The libraries and theo-

532 *Timur (Tamerlane, 1370–1405) in front of his tent surrounded by courtiers. Miniature in one of the oldest illustrated biographies of Tamerlane. 1467. Privately owned, Brooklyn.*

1/A [p. 3 -- Analyst]

162
101 Kazakhs. They originate from a mixture of Kazakhs and Tatars, and half of them lead a sedentary life while the other half are nomads.

5) The Kurama constitute neither a particular tribe nor a separate clan of Kazakhs. They are completely sedentary Kazakhs, settled in the Kurama uyezd of the Syr-Darya oblast', along the Chirchik and Angren rivers. The abundance of water and the ease of irrigation were the original reasons for the development of sedentary life here. Being attached to the land, these Kazakhs have mixed with the Sarts, lost all the tradition of their origin and have borrowed their culture from the Sarts. Nevertheless they have not lost the frankness and the sympathetic character of the Kazakhs. This is a very capable and industrious people in the Turkestan region.

[312]
[181]

6) The Kipchaks are related to the Kirgiz. They live exclusively in the north part of the Fergana oblast', primarily in the Andizhan uyezd, and make up about 10% of the total population of the former Kokand khanate. The Kipchaks, supported by the Kirgiz, nomadizing in the mountains embracing the Fergana valley, played a very important role in all the movements and disturbances which took place in the Kokand khanate before its annexation to Russia. Now this warlike tribe has turned to the peaceful occupations of trade and agriculture.

162
563 7) The Uzbeks constitute 6% of the total population of the Turkestan region. Before the coming of the Russians the leading role in the political and social life belonged to this people. /329/ They constitute the

341 buildings come out crooked and not beautiful. There are no architects and everyone builds as he knows best. The living quarters are in general somber, damp and dark, which gives birth to eye diseases, in addition to which,
363 the houses are not solid. The streets in the towns are crooked and narrow, so much so that the native vehicle, the two wheeled 'arba', can pass only on the main streets. On the side streets a horseman often has difficulty getting through.

The main streets are sometimes improved with cobblestones, but these pavements rarely protect a town from the mud.

366 Stalls, tea-houses and barber shops extend along both sides of the main street leading from the main gates to the middle of the town, to the trading square. This square is usually called 'rigistan'.

312 The towns and villages are provided with water from 'aryks' (irrigation canals) which also serve to irrigate the neighboring gardens, fields and kitchen gardens. Wells help the aryks as well.

361 The general appearance of the populated places makes a very unattractive impression. The only adornment of Central Asian settlements is a mass of verdure which in most cases covers the towns and villages.

364 The conditions of life in all the settlements are just as inconvenient as the native houses from the hygienic point of view. The population does not worry in the least about

361 At the present time one must think of it as two essentially different towns: the Asiatic and the European. The latter, although it lies directly next to the former on the eastern side, has a completely different appearance. Therefore we will describe Asiatic Tashkent first, and then give a few data about the European town.

361 Both the Asiatic and the European Tash-
312 kent are irrigated by aryks /irrigation canals led from the Chirchik river, which flows 8 versts south of the town. A large aryk which looks like a river flows from the Chirchik 45 versts from Tashkent. /405/ This is the Zakh-Aryk (1) which passes 10 versts north of the town.

1. The entire length of the Zakh-aryk is 85 versts. In the upper part it is 77 feet (eleven sazhen's) wide and 3 feet deep. It flows into the river Keles.

Another aryk, the most important one for the town is the Bos-Su, which is conducted from the Chirchik 31 versts from the town. At the Lyabzak gates it enters Tashkent in two branches and flows through the town under various names. A third aryk is led from the Chirchik around Niaz-bek 25 versts east of Tashkent, and flows directly to the Russian part of town. It then flows into the Gadragan aryk, and after that, branching out into small trenches it irrigates the gardens of Russian Tashkent.

[133] The small river Salar, a branch of the Chirchik, independent of the aryks already mentioned, flows 2 versts south of the town.

361 Tashkent, like all important Central Asian towns, used to be surrounded by a high crenelated wall, to which there were 12 gates (darvaza). The wall had a rounded form and extended over an area of 20 versts. The gates bore the names of the towns toward which they opened. Today, the part of the town wall on the side of the Russian town has been completely demolished and the moat filled up. The gates on this side were also destroyed. On the other sides, although they still exist, they are no longer closed.

361 632 Administratively, Tashkent is divided into four parts (yurts) which were formerly under the administration of special officials called ming-bashi. These districts are: Shaikhantaur, Sibzor, Kukchi and Bish-Agach.

361 312 The Shaikhantaur district constitutes the northeastern part of the town. Situated in a flat locality, it is divided almost in half by a deep ravine, through which the Ankhor flows, a wide and swift aryk. The other main aryk flowing through this part of the town, called Gadragan, enters the Russian town not far from the beginning of Tash-Kuche street, and provides it with water, flowing out in 361 small aryks. The Shaikhantaur district has 48 'mahalas' (wards), which are: Tadzhik, /406/ Kashgar, five Yangi-shakhars, Sellim-mechet, Illya, Kiot, Keriady, Tash-kucha, Mir-gancha, Okhche, Zandzhilik, two Kator-turas, Tyurk, Igerchi, Ol'mazar, Doom-begi, Kurgan-araksy, Balyan-mechet, Goukush, Shur-tepe, Degriot, Khadrya, Khouz-bok, Dzhangokh, Khish-mechet, Khodzharush-noye, two Okh-mechets, Darkhon, Padar-kush, Kuduk-bashi, Badak, Shatak,

361 Much more is used for plowland (1814 tanaps) and rice planting (1896 tanaps).

The Sibzor district, occupying the northwestern corner of the town, is divided into 38 mahalas, which are: Kagat, Great /407/ Middle and Little Takhtapul', Chuvalachi, Kara-Saray, Yau, Mazar-khan, Kanly-kucha, Dessin-kucha, Pshta-khammom, Masse-duz, Khatyn-mechet, Khich-kupriuk, Khodzha-kugachi, Labzak, Rabat, Kunlak, Khodja-kucha, Yakhkachub, Khazret-imam, Tyk-kuche, Shakar, Dzhim-kucha, Parchabob, Batyr, Akhun-guzar, Kundzhak, Tchinchak, Kadavod, Chegyt-bashi, Khodja-Taressekon, Turnau-bashi, Big Sibzor, Darbaza-kent, Shakyr-guzar, Kazy-kucha, and Agmem-seid. In addition, four settlements also belong to this part of the town: Ibrahim-ata, whose inhabitants are agriculturists and raise 'dzhenushka', Chalo-kazak, Shano-vod, and Kosh-kizyl. The houses in the Sibzor district total 2230, with a population
361 of 18,650. The Keikaus(1) aryk, which divides
312 off from the Bos-Su aryk 8 versts away and enters the town at the Takhtapul' gates, is the main aryk in this part of town.

1. This aryk is named for Keikaus, the chief of the Tashkent okrug.

It irrigates the Big Takhtapul', Chuvalachi, Kunlak and Yau mahalas, then flows into the Kukcha district, from which it goes
[256] out of the town at the Kuchi-mazar gates. All the flour mills and crushing mills of Sibzor are concentrated on this aryk. The other mahalas are irrigated by small trenches which lead out of the main Keikaus aryk, and bear the names of the mahalas through which they

8:Kostenko 118-G-4,5 (1868-80)1880 RL1 Turkestan
[Tash Kent] RL1

361 flow. The plowed land belonging to Sibzor
312 is irrigated by water which is led from the
• Zakh aryk and Bos-Su, as we have mentioned before.

361 The chief productivity of this district
438 of the town is making boots. The boots made by the inhabitants of the Sibzor district are distributed even to other towns in the territory. After this comes weaving and the decoration of cotton materials. The inhabitants have worked at the last two occupations for a very long time. The most important class of people, as regards wealth, are the herdsmen. The residents of all four settlements are agriculturists, as well as the people of the Takhtapul', Chuvalachi, Kara-sarai, Yau, Sibzor and Kazy-kucha mahalas.

361 /408/ Three medresses (higher insti-
368 tutions of learning): Beklyar-beg, Barakhon, and Kizyl-Kurgan, with about 260 students, make up almost all the educational provision of this part of the town. In addition to the medresses there are also schools (mekhtebe) here, located in private houses.

There are ten major mosques: Odin-mechet, Okhun-guzar, Khatyn-mechet, Mazar-khan, Muimu-barek, Khonoki, Tokhtonun, Rebot, Khodji-Toroskon and Kara-saray.

361 Kukcha, the western part of the town, consists of thirty-one mahalas: Khafiz, Guyaki, Kuttut, Kupryuk-bashi, Big and Little Sauvan, Chakara, Tyapi, Kunzhak, Chagatai, Psyakchi, Chikchiman, Tokle-dzhalob, Kalalan, Ishkuvat, two Langars, Uzgan, Kisya-kurgan, Khuavon,

361 Chukchi, Kunchi, Padikhan, Chukur-Kishlak, Sara-khundan, Kukchi, Abnazar, Ailish, Khalimkup, Damak and Yangy. In all these mahalas together, there are 2511 houses with a population of 22,088. Three main streets cut through this part of town: [312] Sauvan, Kukcha and Chagatai. There are four main aryks which irrigate the Kukcha district: the Keikaus, which enters from the Sibzor district, the Zakh aryk, the Kara-kamysh, and the Dzhangag. The last branches off from the Keikaus at the Lyabzak gates and divides the town into two sections.

The land on which this part of the town is laid out is quite hilly. It is cut through with deep trenches and has many gardens, situated both inside and outside the town. The main [338] production of the Kukcha district is leather working. Thus of the 695 workshops in 1871, 341 were in leather, and 218 were for bootmaking. After this there are 6 brick factories, 7 places making earthenware vessels, 22 mills for grinding and crushing, and also 22 oil manufacturing [368] places. There are two medresses in this part of the town and 34 schools. There are 51 mosques and 18 tombs, of which one, Sheikh Zenedzhin-Baba, deserves attention for its antiquity. The Sheikh came from Bagdad and was buried here 400 years ago.

The Bish-agach district, in the southern corner of the town, consists of 32 mahalas: Yany-Bakhan, Kamalan, Chakar, Darkhan, Zivak-khish-kupryuk, Balyan-mechet, Sarparaz, Char-su, Ishan-Guzar, Samarkand, Okshi, Darbaza, Zenfata, Millyar, /409/ Chupan-ata, Suzugata, Sary-chapak, Dzhillik-mechet, Uzbek, Mirza-khazy, Gul'-bazar, Kugurmach, Ters-aryk, Kuk-mechet, Kul'gulyk,

8:Kostenko 120-G-4,5 (1868-80)1880 RL1 Turkestan
[Tashkent] RL1

361 Takalyk-mazar, Kara-tash, Yalamkary, Mrat', Iskedzhua, Arpapaya, and Lyailak. In these mahalas the houses are counted as 1400 with a population of 12,450. The Bish-agach district is crossed by three main streets: Samarkand, [312] Kamalan and Bish-agach. The main aryks which irrigate this part of the town, and the gardens which belong to it are the Ankhor canal and the canals which branch out from it: the Dzhaty-German, the Big Tanyshar, the Arpapaya, aryk, the Kubyr aryk and the Alamdar. The best gardens and plowed fields belong to the residents of this part of the town, and this is one of the reasons for its sparse population, for the people there often move out of it in order to keep a closer watch on their gardens and plowed land. The settlement of Katartal was formed in this way and the village (kishlak) of Zengata, to which Bish-agach residents began to [776] move 180 years ago. This village is called Zengata, or, more exactly, Zengi-ata, because the tomb of Zengi-ata is located there. He is a venerated saint in Central Asia and every year when all the fruit has ripened enormous crowds of people gather here to worship him, even from such very distant places as Turkestan and Samarkand, not to mention Tashkent which moves out here almost to a man for the duration of this holiday.

[438] The main manufacture of the Bish-Agach district of the town is the production of brick, [368] which belongs almost exclusively to this district In this district there are 3 medresses, 16 home schools, and 68 mosques.

From the above survey of each district of the town it can be seen that the residents

		Families	Males	Females
361	Sarts Residents of Tash.	16,496	39,580	34,213
162	non-residents	22	987	68
	Tatars Residents of Tash.	170	320	253
	non-residents		37	
	Kazakhs Residents of Tash.	24	54	56
	non-residents		122	29
	Persians Residents of Tash.		1	
	non-residents			
	Afghans Residents of Tash.	5	10	9
	non-residents		6	
	Russians Residents of Tash.	5	14	6
	non-residents		18	
	Jews Residents of Tash.	53	124	78
	non-residents		11	
	Hindus		93	
	Chinese			3
	Totals	16,775	41,377	34,715

Grand Total: 16,775 families,
i.e. 76,092 persons.

361 Russian or European Tashkent is directly
[312] next to the Asiatic town, divided from it by
a broad aryk (canal), the Bos-Su.

In spite of its brief existence, the
town is developing very quickly.

[231] /411/ All the okrug administration
as well as the oblast' administration for the
Syr-Darya oblast are in Tashkent,

361 Syr-Darya oblast' are in Tashkent. The Russian
town has been built very regularly and originally.
The broad streets are lined with two rows of
poplar trees growing at the same rate, and this
gives the town the appearance of a luxurious
[342] park. Little sun-dried brick houses, almost
all of one story, appear through the trees.
Many of them have iron roofs decorated with
red or green paint. In recent times, moreover,
several public and private buildings have been
built of fired brick and some are several sto-
ries high. Beside almost every small house is
its own little garden, in which there are se-
[367] veral fruit trees. The best garden in the town
is the one by the house of the Governor General.
His garden is kept up very well, and all through
the summer and fall it is open to the public.
On certain days there is military band music
there. In addition, a garden planted earlier
by the natives also adjoins the town. This is
known as 'myn-uryuk'(which means, 'a thousand
apricot trees'), and it too is visited by the
[312] Tashkent public. The streets and gardens are
irrigated by broad aryks, which serve in addi-
tion for sprinkling the streets. The streets
are sprinkled every day in the summer, and as
a result there is much less dust in the town,
[366] and it also makes it cooler. Many handsome
stores have been built in Tashkent, in which
all products of European industry can be pro-
cured, only they are very expensive here. At
[368] the bazaars one can obtain native goods. There
is an observatory in Tashkent ($2\frac{1}{2}$ versts from
the town), a theater, a classical preparatory
school for boys and one for girls, and several
hotels.

133 The Almatinka is no wider than 7 feet (3 arshins), with a depth of about 9 feet (4 arshins) and it can be forded anywhere. Furthermore the amount of water in the river is decreasing every year.

[312] This decrease of the water of the Almatinka is caused, first of all, by the fact that aryks or canals are led off from it, just after its emergence from the mountains, for the irrigation of the fields, gardens and kitchen gardens. Secondly, it is affected by the cutting down of the trees in the upper reaches of the river. The Almatinka flows into another mountain river, the Keskelen, which in turn flows into the Ili river. The Almatinka owes its name to the fact that its source in the mountains is thickly overgrown with apple trees ('alma') and apricot trees (uryuk).

361 Vernyy is located at a height 2500 feet
132 above sea level, and enjoys a warm and healthy climate. The summer heat rises to 30° centigrade in the shade. The inhabitants have remarked that the climate of the town is growing dryer every year. Formerly the winter cold was more bearable and the snow lasted only a few days. In more recent years the winters have begun to be Russian, about three months long. There is no doubt that here too the cutting down of the forests in the environs of the town has had a somewhat deleterious effect.

The summer heat spells are almost unbearable, but in the evenings and at night it is always cool because of the proximity

In the town are two bazaars: the Taranchi
361 366 one (in the fortress), and the Chinese (in the outskirts). The bazaars differ from the Central Asian ones in that the stalls are somewhat more roomy and counters have been installed, which obstruct the entrance and divide the interior premises from the buyers. The bazaar streets are not covered above, as a result of which they are not protected from rain or heat. In the Chinese bazaar women often trade in the stalls, and here occasionally one sees flowers, a purely Chinese feature, since in the Central Asian Moslem towns the sale of flowers would be considered the height of absurdity.

[265] In the Chinese part of town there are several restaurants at the bazaar in which those who wish can eat their fill for about 20 kopecks; the hungry man gorges himself on sweets. In these restaurants a remarkable variety of dishes is prepared. In order to enter a restaurant one must first pass through the kitchen, which is directly on the street to arouse the olfactory senses of the passer-by. In spite of the fact that the kitchens are kept very tidy and the preparation of the food is quite clean, a sharp and suffocating smell announces the presence of a restaurant at quite a long distance, and a European must have very strong nerves to bear this smell for very long.

[263] [312] The main streets in town are paved with small stones. Aryks are laid out among them, nicely laid with brick. On the whole, the town is miserable and dirty, and the Chinese section is particularly dirty. However the movement of people is greater in the Chinese section, while in the Taranchi bazaar the staid Moslems sit sedately in their booths, yawning and

3: Czaplicka E-4 (no date) 1918 RL4 Turkic Peoples
Turkestan RL1

a million. Next to sheep in importance is the breeding of horses and cows. In the cattle-breeding area the butter industry is very successfully carried on, especially in the governments of Tomsk and Tobolsk, and the chief centres of its export are Barnaul, Omsk, and Kurgan. In 1913 the exports equalled 4·9 million puds as against 1·7 million puds in 1903. Closely allied to these industries is the export of live stock, bacon, game, wool, hair, skins and furs. But although they occupy a considerable place, it is the corn which comes first in quantity and cotton first in value among all Central Asiatic products. The pre-war export along the railway shows the following proportion between the various goods: Corn, 35·6 per cent. (of all exported goods); cotton, 4·3 per cent.; butter, 1·5 per cent.; fish, 1·2 per cent.; meat, 1·0 per cent.

In the production of corn Western Siberian ranks first; 7 per cent. of the native population scarcely take any part in this industry; while out of 93 per cent. of European population, 87 per cent. is composed of Great Russians, on whom agriculture chiefly depends. The cattle- and especially sheep-breeding depend to a great extent on the Kirghis and other Turkic tribes, forming 50 per cent. of the population in the Akmolinsk and 85 per cent. in the Semipalatinsk territories. But it is the cotton industry which almost entirely rests upon the native (Sarts and other Turkic tribes) labour.

The cotton industry is closely connected with irrigation, and again the irrigation canals form the most valuable possession of the natives. The canals seem to have been much more numerous in ancient times, and the remnants of them are found even in such barren deserts as Kizyl-Kumakh or Gary-ishek-otran. The native law codes (*shariat* as well as *'ādat*) recognize that the water is common property, which cannot be sold or bought, and that the land belongs to him who irrigates it. To look after the equal use of the irrigation canals, called *aryka*, an elder, called *mirab*, is chosen from among one settlement, and over several *mirabs* an *aryk-*

3: Czaplicka E-4 (no date) 1918 RL4 Turkic Peoples
Turkestan RL1

aksakala is elected, looking after the whole system of the chief canal. The lands irrigated by the natives in Turkestan (including Transcaspia), Bokhara, and Khiva equal 4,758,000 dess., or 2·6 per cent. of all the area. Since the Russian occupation, many attempts were made at reconstructing some of the ancient canals on modern lines. As the result of this, in the last few years before the war the Murgab canals were accomplished, irrigating some 25,000 dess., and the Romanoff canal, irrigating some 65,000 dess., in the north-eastern part of the Golodnaya ('Hunger') Steppe. A plan for irrigating a further four million dess. has been drafted.

No doubt this energy of the Russian administration was guided by appreciation of the immense value of the cotton industry. In 1913 some 550,000 dess., including the vassal Khanates, was under cotton plantations, realizing about 13½ million puds of cotton fibre (in 1914 some 675,000 dess., realizing some 13·9 million puds). Ferghana, which, it must be remembered, is the best-irrigated province, produced 75 per cent. of all cotton. Next comes the Tashkent district of Syr-Daria territory; the Katta-Kurgan, Khojent, and Samarkand districts of Samarkand territory; and the Merv and Tejent districts of the Transcaspian territory. It is owing to Russian influence that the old Central Asian specie of cotton (*Gossypium herbaceum*, L.) was almost entirely replaced by the American specie (*Gossypium hirsutum*, L.). The cotton plantations form a chief revenue of the Central Asiatic people, and were designated almost entirely for export. At the outbreak of war Russia occupied fifth place in cotton production (after U.S.A., Great Britain, Egypt, and China), and fourth place in cotton manufacture (after Great Britain, U.S.A., and Germany), and only one-fifth of her cotton was grown outside Central Asia (in Transcaucasia).

Other industries which might have a prosperous future are the rice and tobacco plantations and the rearing of silk-worms (at present Turkestan produces about 100,000 puds of dry cocoons per annum).

It has been said that this rich area has no communication